

## Reference 1

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(21)Application number : 50-124007 (71)Applicant : TOPPAN PRINTING CO LTD  
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### INK COMPOSITION

#### Sole Claim:

An ink composition comprising volatile organic solvent, a binder of natural or synthetic resin that is orally applicable and soluble in the solvent and a drug for oral use in human or animals, which will be applied on edible film by printing, application, dropping and the like to give a film formulation.

(page 2, left and lower column, lines 5-11)

The binders and auxiliaries need to be non-toxic in the formulation and soluble in the organic solvent, which include, for example, cellulose derivatives such as hydropropylcellulose, hydromethylcellulose, cellulose acetate and phthalate; and natural resins such as shellac resin, amber resin and pine resin.

(page 2, right and lower column, lines 1-7)

The binders and auxiliaries also include hydrogenated oil derived from palm oil, beef tallow, and ricinus; aliphatic acids such as stearic acid, palmitic acid, and lauric acid; wax such as beeswax, sugarcane wax, and haze (Japanese) wax; surfactants such as glycerin esters of aliphatic acid and polyoxyl stearate.

(page 3, left and upper column, line 12 – right and upper column, line 12)

In order to accelerate solubilization of the agents after oral administration, it is preferable to add compounds soluble in water, such as D-sorbit, lactose, sodium hydrophosphate, Arabic gum, CMC and casein. Antiseptics may be optionally added. It is also possible to control the absorbance of the drug by selecting and combining the binders and auxiliaries. For example, to give an enteric formulation, a binder that is not soluble under an acidic condition in stomach, but soluble in intestinal fluids under neutral or weak alkaline conditions may be used such as shellac, cellulose acetate and phthalate, methylmethacrylate/methacrylic acid copolymer, etc.

In order to make the agents rapidly dissolve in gastric juice with pH of 5.0 or less, it may be possible to use, for example, polyvinylacetal diethylaminoacetate, cellulose acetate-N,N-di-n'-butylaminohydroxypropyl ether, dimethylaminoethylmethacrylate, methylmethacrylate copolymer and the like.

(page 3, left and lower column, lines 2-9)

(Example 1)

Ethyl alcohol	56 %
n-Propyl alcohol	8 %
Shellac	16 %
Carbazochrome	20 %

The above ink composition may be used as flexographic ink. n-Propyl alcohol was added to control a dry characteristics.